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Huang

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(54) **SWITCH ARRANGEMENT OF A WIRELESS BURGLAR ALARM SYSTEM**

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(52) **U.S. Cl.** **340/568.1**; 340/693.9; 340/687; 340/686.6; 340/539; 340/571; 224/269
(58) **Field of Search** 340/568.1, 568.6, 340/687, 571, 539, 693.9, 693.12; 224/255, 269, 908, 163, 904; 24/3.11, 3.12, 3.1, 168, 170, 171, 334, 336, 307

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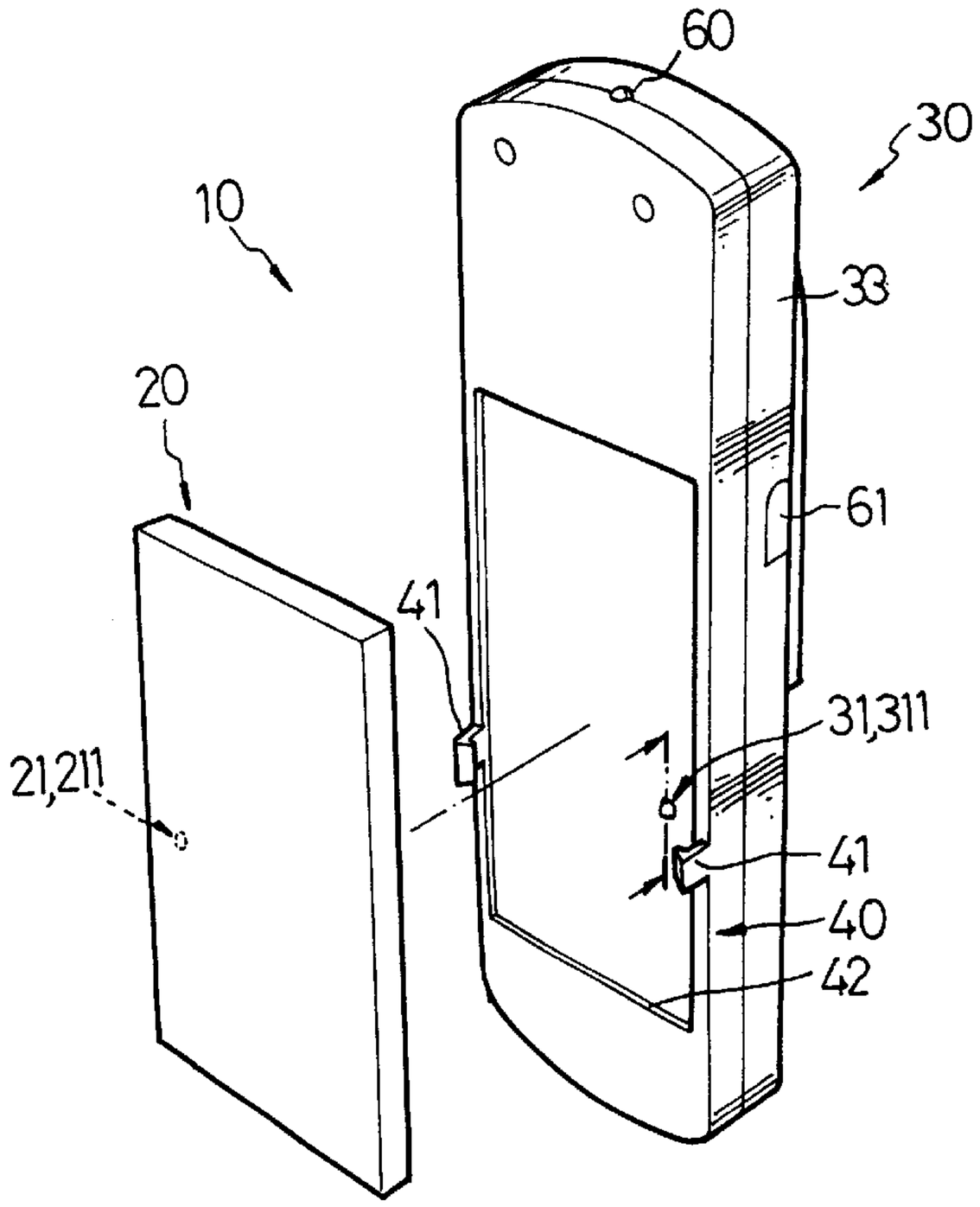
(57) **ABSTRACT**

A switch arrangement includes a transmitter, a receiver, and a locating mechanism, the transmitter and the receiver having a respective power circuit and a respective power on/off switch controlling the respective power circuit, the transmitter being controlled to transmit a radio signal, the receiver receiving the radio signal from the transmitter and running subject to the radio signal received, the locating mechanism being used to hold the transmitter and the receiver together, the power on/off switches of the receiver and the transmitter being forced to switch off the respective power circuits when the transmitter and the receiver are fastened together, the power on/off switches of the receiver and the transmitter automatically switching on the respective power circuits when the transmitter and the receiver are separated from each other.

11 Claims, 4 Drawing Sheets



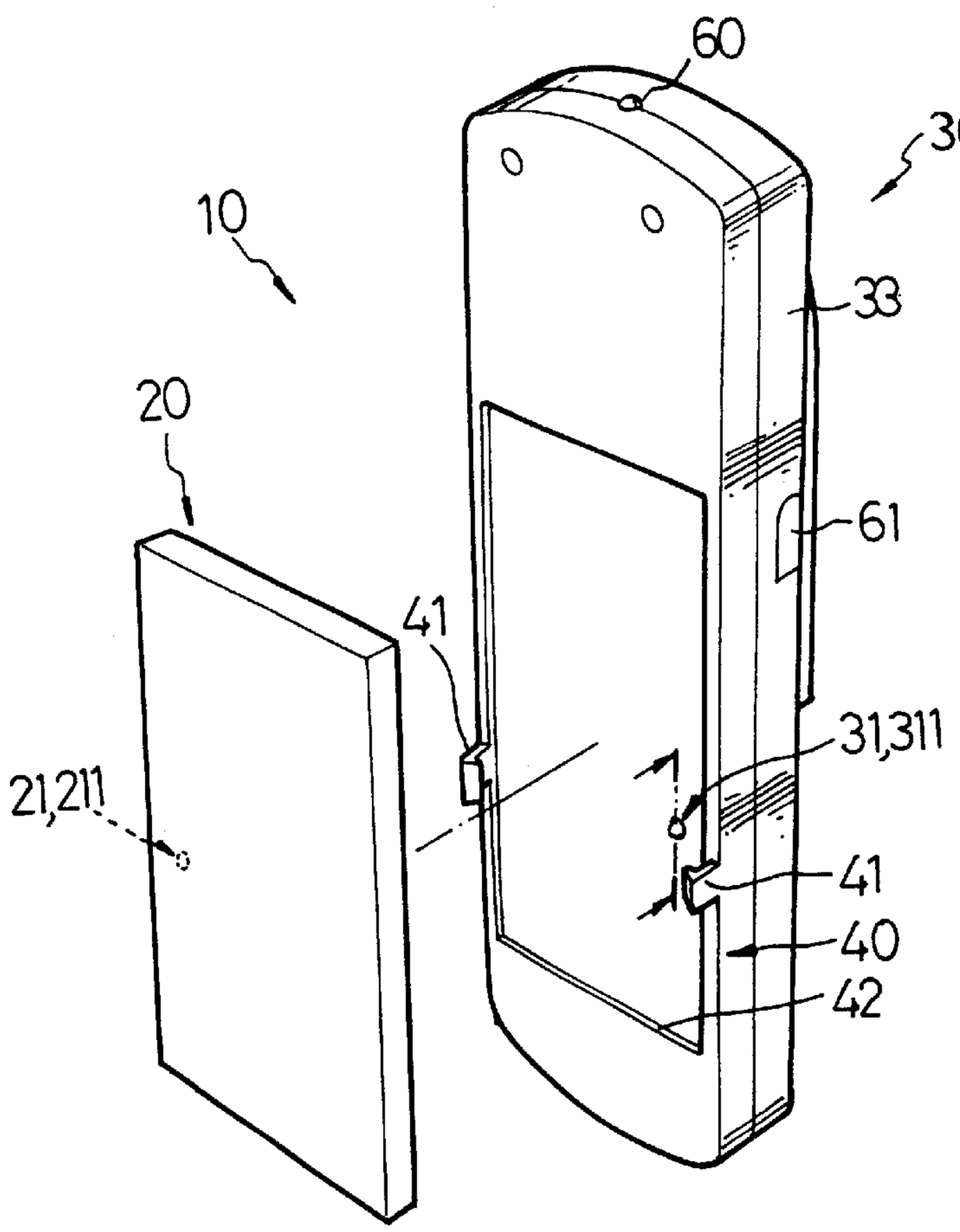


FIG. 1

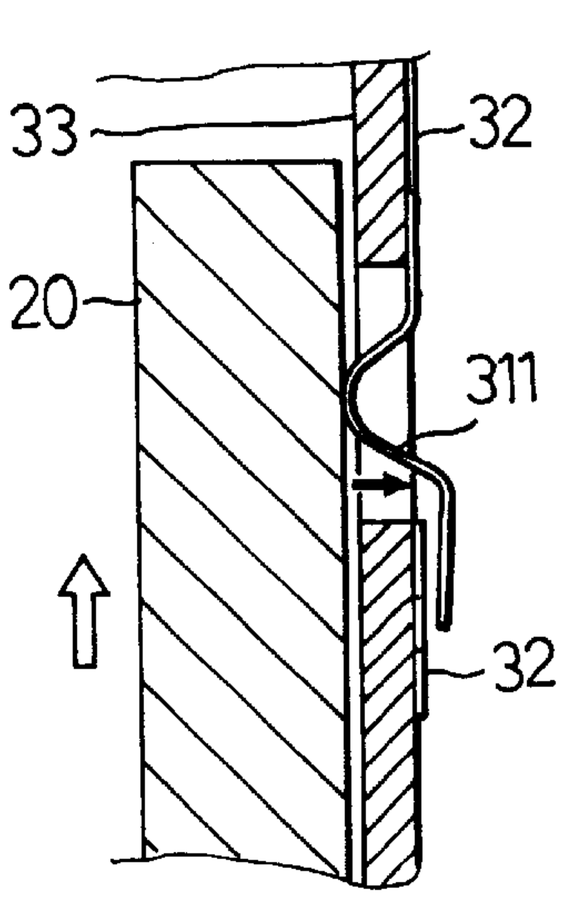


FIG. 3

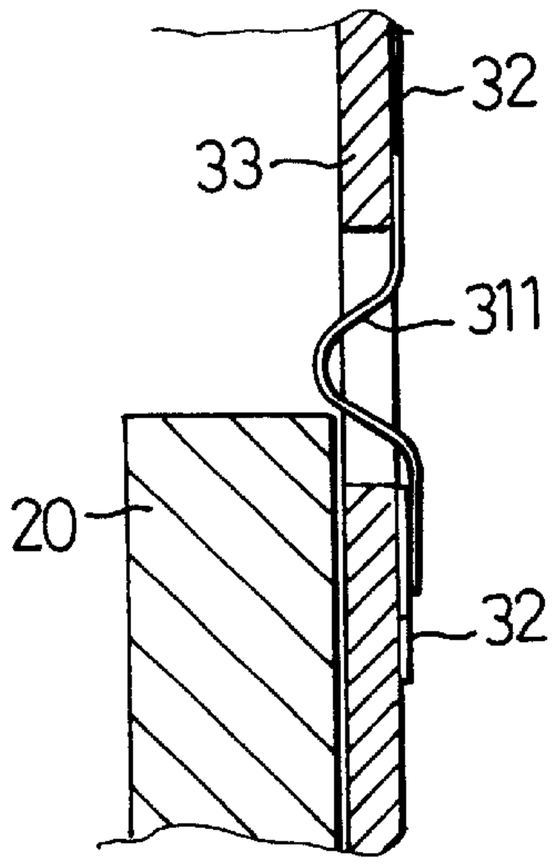


FIG. 2

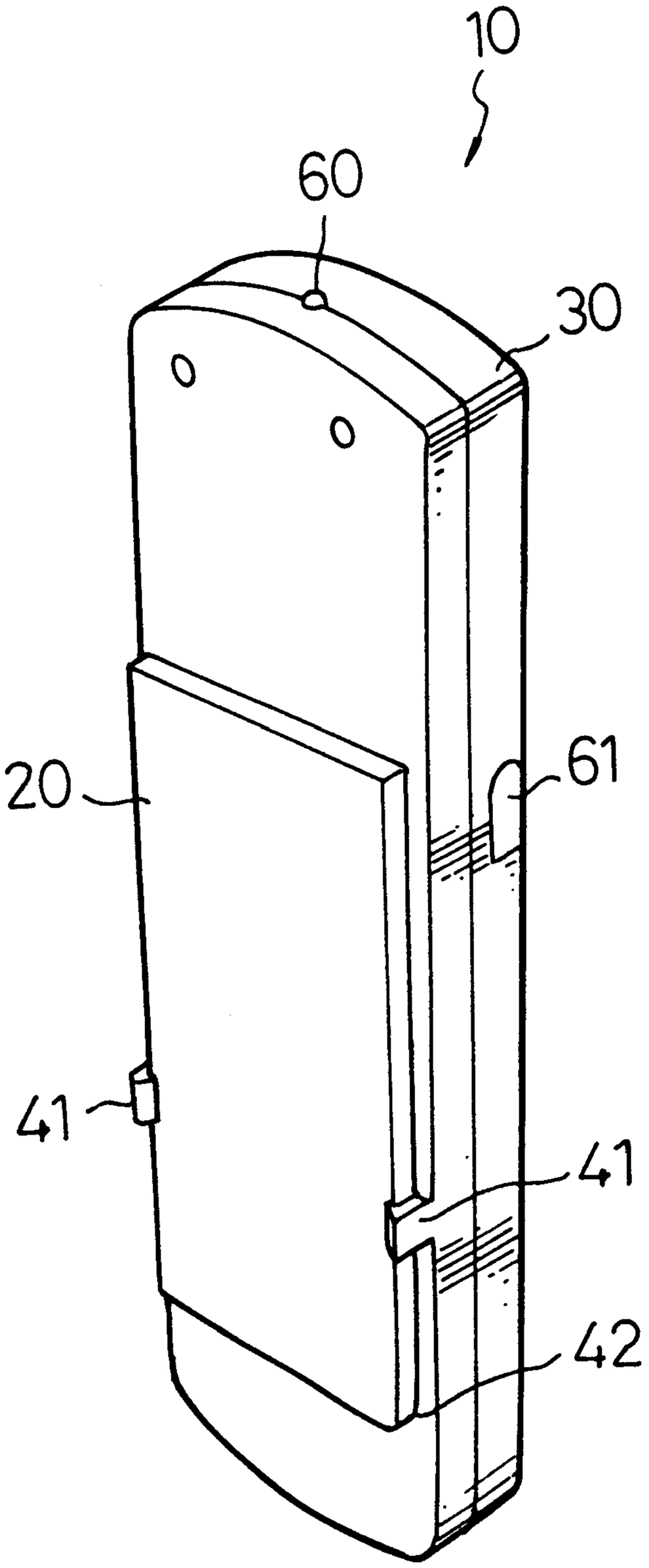


FIG. 4

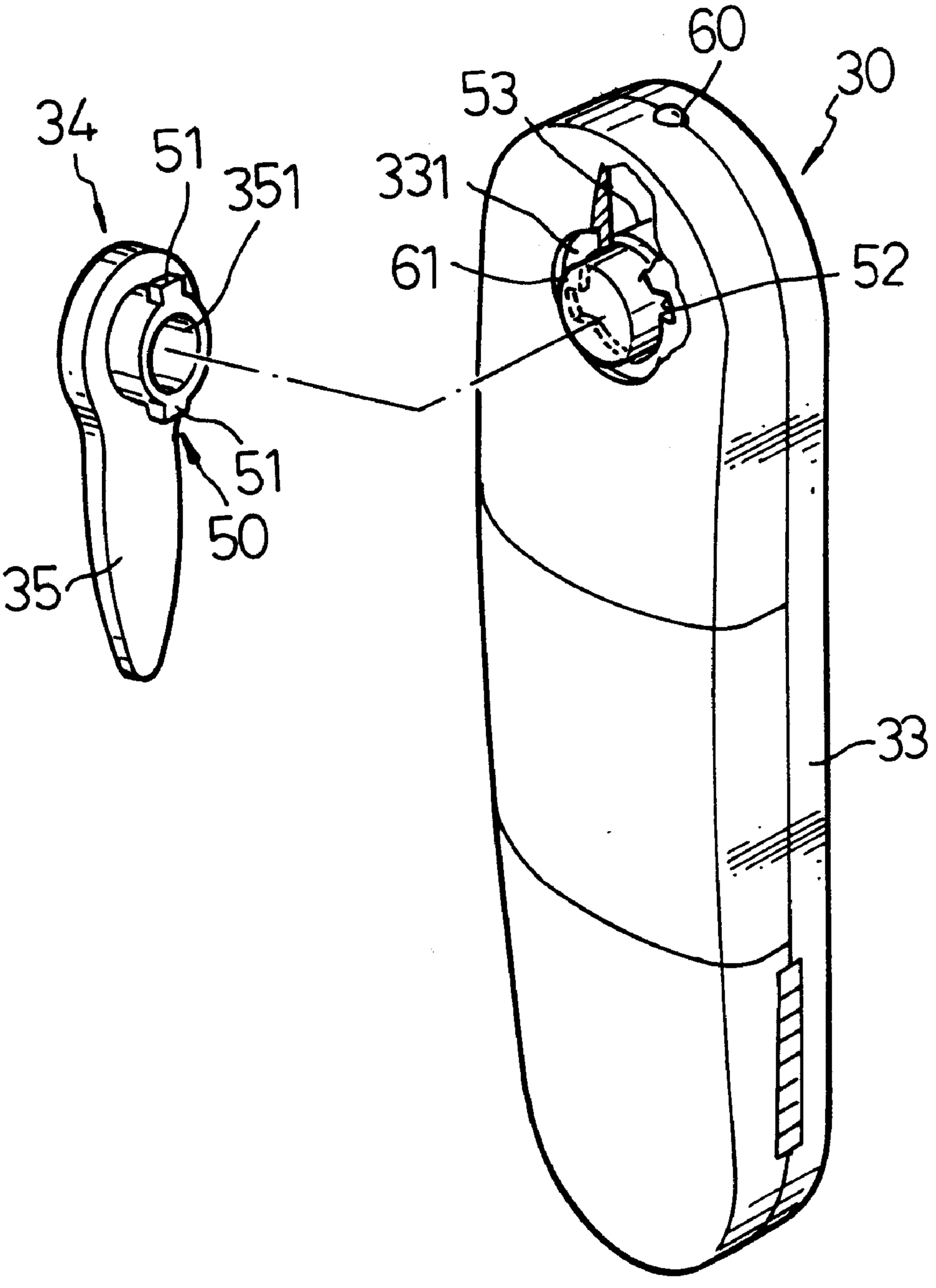


FIG. 5

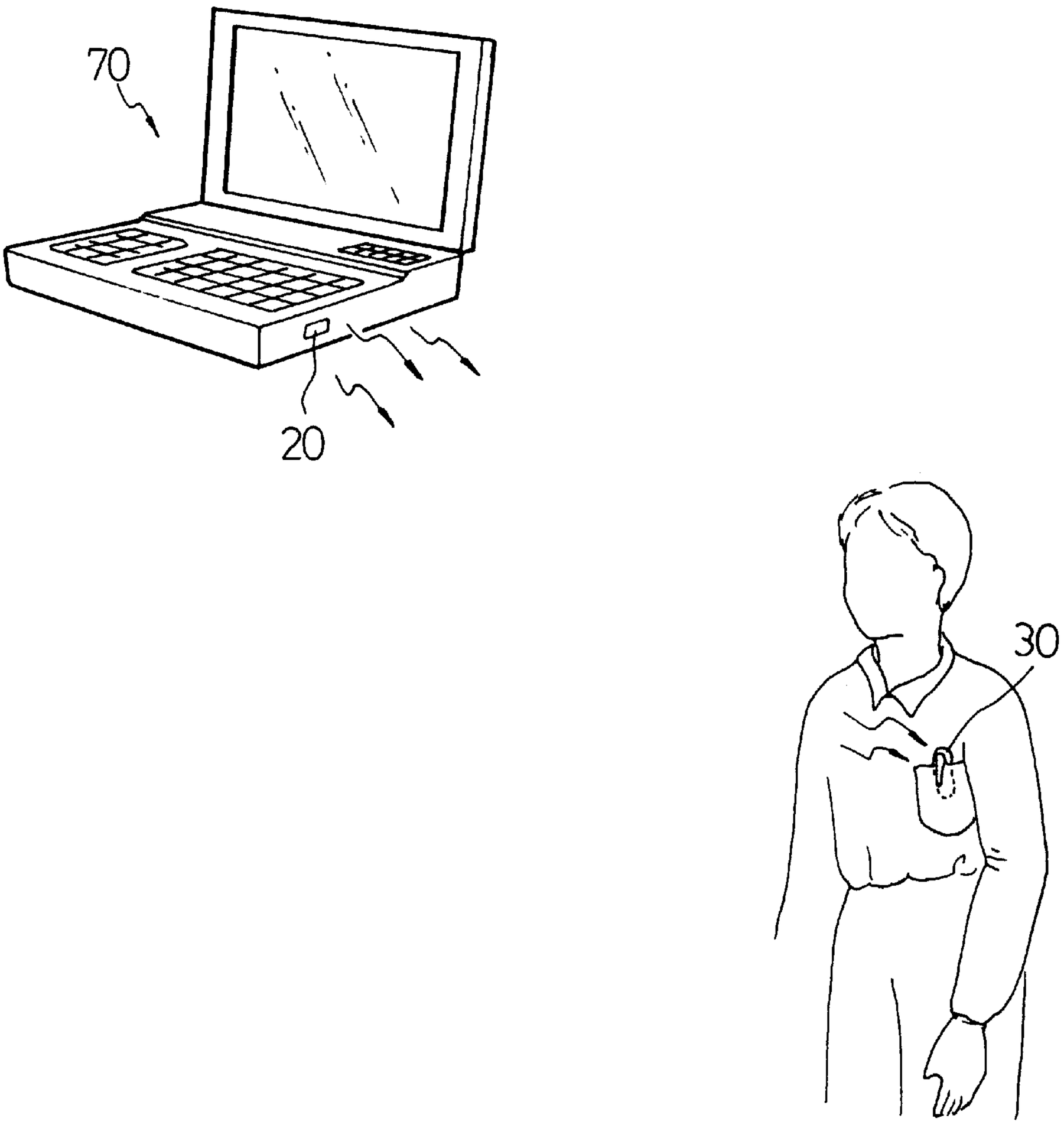


FIG. 6

SWITCH ARRANGEMENT OF A WIRELESS BURGLAR ALARM SYSTEM

BACKGROUND OF THE INVENTION

The present invention relates to a wireless burglar alarm system, and more particularly to such a wireless burglar alarm system which automatically turns on/off power supply.

A regular wireless burglar alarm system is generally comprised of a transmitter and a receiver. The transmitter and the receiver comprise a respective power circuit, and a respective power on/off switch controlling the respective power circuit. When in use, the power circuits of the transmitter and the receiver must be respectively switched on. When not in use, the power circuits of the transmitter and the receiver must be respectively switched off. If the user forgets to turn on the power circuit of the transmitter or the receiver, the burglar system becomes unable to function well. If the user forgets to turn off the power circuits of the transmitter and the receiver when not in use, battery power supply is wasted.

SUMMARY OF THE INVENTION

It is one object of the present invention to provide a wireless burglar alarm system which automatically turns off power supply when not in use. It is another object of the present invention to provide a wireless burglar alarm system which is compact and portable, and can be used as a handy illuminator. The present invention comprises a transmitter, a receiver, and a locating mechanism. The transmitter and the receiver comprise a respective power circuit and a respective power on/off switch controlling the respective power circuit. The transmitter is controlled to transmit a radio signal. The receiver receives the radio signal from the transmitter, and runs subject to the radio signal received. The locating mechanism is used to hold the transmitter and the receiver together. The power on/off switches of the receiver and the transmitter are forced to switch off the respective power circuits when the transmitter and the receiver are fastened together. On the contrary, the power on/off switches of the receiver and the transmitter automatically switch on the respective power circuits when the transmitter and the receiver are separated from each other. The transmitter can be put in the object to be protected, and the receiver can be carried by the user. When the distance between the transmitter and the receiver surpasses a predetermined range, the receiver immediately outputs an alarm signal. The locating mechanism can be provided at the receiver, or the transmitter. Hook and loop materials, adhesive tape, box, elastic band, etc., may be used instead of the locating mechanism to fasten or hold the transmitter and the receiver together. A coupling mechanism may be provided to fasten a clip to the receiver. A lighting circuit may be installed in the receiver.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an exploded view of a transmitter and a receiver according to the present invention.

FIG. **2** is a sectional view showing the transmitter attached to the receiver according to the present invention.

FIG. **3** is similar to FIG. **2** but showing the transmitter set into position, the power on/off switch of the receiver switched off.

FIG. **4** is a perspective view showing the transmitter and the receiver fastened together.

FIG. **5** is an exploded view of the clip and the receiver according to the present invention, showing the structure of the coupling mechanism.

FIG. **6** shows an application example of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. from **1** through **4**, a wireless burglar alarm system **10** is shown comprised of a transmitter **20**, a receiver **30**, and a locating mechanism **40**.

The receiver **30** receives radio signal from the transmitter **20**, and runs subject to the instruction of the radio signal received. When in use, the transmitter **20** is put with the object to be protected together, and the receiver **30** is carried by the user. When the receiver **30** is carried by the user away from the transmitter **20** over a set distance, the receiver **30** receives no signal from the transmitter **20**. A certain length of time after having received no signal from the transmitter **20**, the receiver **30** immediately shrieks or vibrates to remind the user. This radio transmission operation is of the known art and not within the scope of the present invention, it is not described in detail.

The transmitter **20** and the receiver **30** comprise a respective power on/off switch **21** or **31**. The power on/off switch **21** or **31** is comprised of a projecting spring leaf **211** or **311**. The projecting spring leaf **311** of the receiver **30**, as shown in FIGS. **2** and **3**, has a curved middle part projecting out of the shell **33** of the receiver **30**, a fixed end securely connected to a first contact at a power circuit **32**, and a free end disposed in contact with a second contact of the power circuit **32**. The power on/off switch **21** of the transmitter **20** has the arrangement.

The locating mechanism **40** comprises two retainers (for example, springy hooks) **41** and a holder means **42**. The retainers **41** are bilaterally disposed on the shell **33** of the receiver **30**, and made subject to the profile of the transmitter **20**. The holder means **42** is a recessed seat disposed on the shell **33** between the retainers **41** for receiving the transmitter **20**. The transmitter **20** fits the recessed seat of the holder means **42**. When the transmitter **20** is put in the recessed seat of the holder means **42**, it is retained in place by the retainers **41**. As an alternate form of the present invention, the locating mechanism **40** can be made having three retainers **41** disposed at three sides of the recessed seat of the holder means **42**.

When the transmitter **20** and the receiver **30** are fastened together, the projecting spring leaf **211** of the transmitter **20** is forced inwards by the shell **33** of the receiver **30** and the projecting spring leaf **311** of the receiver **30** is forced inwards by the shell of the transmitter **20**, thereby causing the power on/off switches **21** and **31** to cut off the respective power circuits **32**.

Further, the receiver **30** is equipped with a lighting circuit, therefore it can be used as an illuminator. The lighting circuit of the receiver **30** comprises a lamp bulb **60** disposed on one end of the receiver **30**, and a control switch **61** mounted in a hole **331** at one lateral side of the receiver **30**.

Referring to FIGS. **5** and **6**, a clip **34** is fastened to the receiver **30** by a coupling structure **50**. The clip **34** comprises a clip body **35**, and a coupling hole **351** at one end of the clip body **35**. The coupling structure **50** comprises a pair of lugs **51**, a pair of guide slots **52**, and a track **53**. The lugs **51** are formed integral with the clip body **35** of the clip **34** at two opposite sides of the coupling hole **351**. The track **53** is disposed behind the guide slots **52** inside the receiver **30**.

The clip **34** is fastened to the receiver **30** by inserting the lugs **51** through the guide slots **52** into the track **53** and then turning the clip **34** through an angle to move the lugs **51** away from the guide slots **52**, enabling the lugs **51** to be retained to the inside of the shell **33** of the receiver **30** in the track **53**. By means of the clip **34**, the receiver **30** can be fastened to the pocket (see FIG. **6**).

Referring to FIG. **6** again, the transmitter **20** can be made in the form of a diskette, and inserted into a diskdrive (not shown) in a notebook computer **70**. The receiver **30** is fastened to the user's pocket. When the distance between the receiver **30** and the notebook computer **70** surpasses a predetermined range, the receiver **30** receives no signal from the transmitter **20**, and the alarm of the receiver **30** is triggered to output an audio alarm signal, reminding the user to take the necessary steps.

It is to be understood that the drawings are designed for purposes of illustration only, and are not intended as a definition of the limits and scope of the invention disclosed. The locating mechanism can be provided at the transmitter **20** for securing the receiver **30** to the transmitter **20**. Hook and loop materials, adhesive tape, box, elastic band, etc., can be used to fasten or hold the transmitter **20** and the receiver **30** together instead of the aforesaid locating mechanism.

What the invention claimed is:

1. A switch an arrangement comprising:

a transmitter to transmit a radio signal;

a receiver to receive the radio signal from said transmitter and run subject to the radio signal received; and

locating means for holding said transmitter and said receiver together, said transmitter and said receiver having a respective power circuit and a respective power on/off switch controlling the respective power circuit,

wherein said power on/off switch is forced to switch off said power circuit when said transmitter and said receiver are fastened together by said locating means.

2. The switch arrangement of claim **1** wherein said locating means is provided at said receiver to secure said transmitter to said receiver.

3. The switch arrangement of claim **2** wherein said locating means comprises a plurality of retainers respectively raised from a shell of said receiver at one side for securing said transmitter.

4. The switch arrangement of claim **1** wherein said receiver comprises a lighting circuit, said lighting circuit comprises a lamp bulb, and a control switch operated to turn on/off said lamp bulb.

5. The switch arrangement of claim **4** wherein said control switch is mounted in a hole at a shell of said receiver.

6. The switch arrangement of claim **1** wherein said receiver comprises a shell, a coupling structure, and a clip fastened to said shell by said coupling structure, said coupling structure comprises a pair of guide slots formed in the shell of said receiver, a track formed in the shell of said receiver behind said guide slots, and a pair of lugs formed integral with said clip and inserted through said guide slots into said track and turned with said clip through an angle into engagement with said track.

7. The switch arrangement of claim **6** wherein said clip has a coupling hole coupled to a part in the shell of said receiver.

8. The switch arrangement of claim **1** wherein said locating means is provided at said receiver.

9.The switch arrangement of claim **8** wherein said locating means comprises a plurality of retainers disposed on said receiver subject to the profile of said transmitter for securing said transmitter to said receiver.

10. The switch arrangement of claim **1** wherein said receiver comprises a lighting circuit, and said lighting circuit comprises a lamp bulb and a control switch operated to turn of/off said lamp bulb.

11. The switch arrangement of claim **10** wherein said control switch is mounted in a hole at a shell of said receiver.

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